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Abstract

Background: This article reports the preliminary findings of an ethno-botanical survey that was carried out in the Thal Desert, Punjab, Pakistan during 2010 to 2013. The aim of this study was to document the traditional use of medicinal plants from the study area.

Materials and Methods: The whole area was surveyed for inventorying medicinal flora by using a semi-structured questionnaire.

Results: The people of the study area are extremely knowledgeable, hence reported 120 plants which are being used in treating various human diseases. The detailed inventory including botanical name, parts used, method of preparation and diseases treated is provided in this paper.

Conclusion: This study revealed that the inhabitants possessed empirical knowledge of medicinal plants which would be useful in developing health care products and preserving traditional cultures as well as phyto-diversity.

Keywords: Ethno-botanical survey, Semi-structured questionnaire, Inventory, Medicinal flora, Thal Desert, Phyto-diversity.

Introduction

Scientists are interested in ethno-botanical works for the development of natural products due to increasing demand for plant origin medicaments in developing countries. Such information lies with the indigenous communities who by virtue of practice possess centuries-old traditional use of plants, in meeting their healthcare needs. Various ethno-botanical surveys revealed that elder persons have also considerable knowledge about the uses of plants. Such traditional information is transferred from generation to generation (Qureshi and Shaheen, 2013). The ethno-botanists are naturally interested in obtaining data/information/know how about the likely use of plants and their products from remote areas (Bhatti *et al.*, 1998).

In Pakistan, ethno-botany is now well established discipline and various researchers reported good work across the country (Abbas *et al.*, 2013; Ahmed *et al.*, 2013; Ilyas *et al.*, 2013; Qureshi and Shaheen, 2013; Ahmad *et al.*, 2012; Qureshi *et al.*, 2012a,b; Rauf *et al.*, 2012; Shaheen *et al.*, 2012; Iqbal *et al.*, (2011), Rahim *et al.*, 2012; Khan *et al.*, 2011; Abbasi *et al.*, 2010; Ahmad *et al.*, 2009; Ali and Qaiser, 2009; Qureshi and Bhatti, 2007; Qureshi *et al.*, 2006a,b; 2003; 2002; Hamayun *et al.*, 2003 and Qureshi 2002; Goodman and Ghafoor, 1992; Malik *et al.*, 1990; Shinwari and Malik, 1989; Hocking, 1958-62).

Although 88% of the total area of Pakistan is classified as arid and semi-arid, however, less attention is being paid to carry out research on desert habitats. Only a few papers have also been published (Bhatti *et al.*, 1998; 2001; 2002; Qureshi, 2012a; Qureshi *et al.*, 2011; 2010; Qureshi and Bhatti, 2009; 2008; 2007; 2006; 2001). The Thal Desert is not yet fully known with reference to ethno-botanical research. So this study was carried out to explore this region for extraction of ethno-botanical information pertaining to medicinal plants.

Materials and Methods

The whole study area was surveyed during January, 2010 to September, 2010 for inventorying ethnomedicinal flora. The local inhabitants including herbalists (*Hakeem*), ethno-veterinarian and midwives (Daai) were interviewed to record medicinal uses of native species by using semi-structured questionnaire (Qureshi and Bhatti, 2008). During the survey, plant specimens were also collected from the study area. The same were identified with the help of floristic material (Nasir and Ali 1970-1989; Ali and Nasir 1990-1991; Ali and Qaiser, 1993-2007; Boulos, 1991; Qureshi, 2012b). The correctly identified specimens are deposited in the Herbarium of Pir Mehr Ali Shah Arid Agriculture University for record.

Results

The people of the study area are extremely knowledgeable which reported 120 plants belonged to 87 genera and 44 families in treating various human diseases. The detailed inventory including botanical name, parts used, method of preparation and diseases treat is provided in **Table 1**. Some of the important medicinal plants depicting their habits are provided under **Plate-1**.

Discussion

Such type of ethno-botanical enumerations are carried out from various desert habitats such as Bhatti *et al.* (2001), Qureshi (2012), Qureshi *et al.* (2011, 2010), Qureshi and Bhatti (2009, 2008, 2007, 2006, 2001), and the findings of present study is in agreement with these studies. Usually *Hakeems* and elder persons especially women were aware of different uses of plants but this knowledge was rarely found in younger generation. Based on the results it can be concluded that the flora of Thal Desert possesses remarkable medicinal values only known to indigenous communities of

Table 1: The inventory of medicinal plants along with family, parts used, method of preparation and diseases treated

| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|---|------------------------------------|---------------------------------|--|
| | Agavaceae | | | |
| 1 | <i>Agave sisilana</i> Perr. Ex Engelm. | Pulp | Potherb, paste | Jaundice, acidity, constipation, piles, boils, pimples, skin problems |
| | Aizoaceae | | | |
| 2 | <i>Limeum indicum</i> Stocks ex T. Anders. | Leaves | Paste | Wounds |
| 3 | <i>Gisekia pharnaceoides</i> L. | Whole plant | Juice | Abdominal/stomach problem |
| 4 | <i>Trianthema portulacastrum</i> L. | Roots | Decoction | Jaundice |
| 5 | <i>Zaleya pentandra</i> (L.) Jeffrey | Whole plant | Juice | Kidney stones |
| | Alloaceae | | | |
| 6 | <i>Aloe vera</i> L. | Pulp | Potherb, Pulp | Jaundice, pimples |
| | Amaranthaceae | | | |
| 7 | <i>Achyranthes aspera</i> L. | Whole plant | Decoction, ash, powder | Asthma, cough, pain |
| 8 | <i>Aerva javanica</i> (Burm. f.) Juss ex J. A. Shultes. | Leaves, Whole plant, inflorescence | Paste, decoction | constipation, boils, pimples |
| 9 | <i>Alternanthera pungens</i> Kunth in H.B.K. | Roots | Decoction | Jaundice |
| 10 | <i>Amaranthus graecizans</i> L. | Leaves | Potherb | Constipation |
| 11 | <i>Amaranthus ovalifolius</i> L. | Leaves | Potherb | Constipation |
| 12 | <i>Amaranthus viridis</i> L. | Leaves | Potherb | Constipation |
| 13 | <i>Celosia argentea</i> L. | Seeds, Flowers | Powder, Poultice | Boils, dysentery, leucorrhoea, diarrhea |
| 14 | <i>Digera muricata</i> (L.) Mart. | Leaves | Potherb | Constipation |
| | Apiaceae | | | |
| 15 | <i>Anethum graveolens</i> L. | Seeds | Powder | Constipation, abdominal/stomach problem |
| | Apocynaceae | | | |
| 16 | <i>Rhazya stricta</i> Decne. | Leaves, Aerial parts | Powder | Piles, abdominal/stomach problem |
| | Arecaceae | | | |
| 17 | <i>Phoenix sylvestris</i> L. | Fruits | Raw fruits | Tonic |
| | Asclepiadaceae | | | |
| 18 | <i>Calotropis procera</i> (Willd.) R. Br. | Leaves, Whole plant, Fruits, Latex | Powder, Extract, Latex, Flowers | Jaundice, boils, wounds, abdominal/stomach problem, asthma, pain, inflammation |
| | Asteraceae | | | |
| 19 | <i>Amberboa ramosa</i> (Roxb.) Jafri | Whole plant | Juice | Blood purifier, boils, pimples, skin problems |
| 20 | <i>Carthamus oxycantha</i> M.B. | Leaves, Whole plant, Seeds | Rosted seeds | Cancer |
| 21 | <i>Centaurea iberica</i> Trev. | Roots, Aerial parts | Extract | Kidney stones |
| 22 | <i>Echinops echinatus</i> Roxb. | roots, Aerial parts | Powder, extract | Pain, fever |
| 23 | <i>Iphiona grantioides</i> (Boiss.) Anderb. | Leaves, Aerial parts | Paste | Boils |
| 24 | <i>Launaea residifolia</i> (L.) O. Kuntze. | Latex | Paste | Boils, pimples |

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| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|---|--------------------------------------|---|---|
| | Bombacaceae | | | |
| 25 | <i>Bombax malabaricum</i> DC. | Roots | Decoction, powder | Abdominal/stomach problem, sexual problems |
| | Boraginaceae | | | |
| 26 | <i>Cordia gharaf</i> (Forssk.) Ehren. ex Asch. | Pulp, Fruits | Raw fruits | Pain |
| 27 | <i>Cordia myxa</i> L. | Fruits | Raw fruits | Pain |
| 28 | <i>Heliotropium europeum</i> L. | Leaves | Juice, ash | Boils, pimples, skin problems, wounds |
| 29 | <i>Heliotropium strigosum</i> Willd. | Whole plant | Juice, powder, extract | Jaundice, liver disease |
| 30 | <i>Nonea edgeworthii</i> A. DC. | Leaves | Juice, extract | Cough |
| 31 | <i>Trichodesma indicum</i> (L.) R. Br. | Leaves, whole plant, root | Juice, extract, decoction | Wounds, pain, vomiting, urinary, joint pain, cough, cold, fever and dysentery |
| | Brassicaceae | | | |
| 32 | <i>Brasica compestris</i> L. | Leaves, oil | Potherb, Oil | Jaundice, constipation, abdominal/stomach problem, anti-lice, athlete foot |
| 33 | <i>Eruca sativa</i> Miller | Seeds, oil | Rosted seeds, oil | Jaundice, piles, skin problems, abdominal/stomach problem, anti-lice, earache |
| 34 | <i>Farsetia hamiltonii</i> Royle | Whole plant | Powder | Constipation, piles, abdominal/stomach problem, pain |
| 35 | <i>Farsetia jacquemontii</i> Hook.f. & Thomson | Whole plant | Powder | Constipation, piles, abdominal/stomach problem, pain |
| 36 | <i>Sisymbrium irio</i> L. | Seeds | Powder | Fever |
| 37 | <i>Sisymbrium orientale</i> L. | Seeds | Powder | Fever |
| | Caesalpiniaceae | | | |
| 38 | <i>Cassia fistula</i> L. | Pulp | Pulp | Constipation |
| 39 | <i>Cassia italica</i> (Mill.) F.W.Andr. | Leaves, roots, seeds, flowers | Potherb, juice, decoction, extract, raw fruits, raw seeds | Jaundice, constipation, piles |
| | Capparidaceae | | | |
| 40 | <i>Capparis decidua</i> (Forssk.) Edgew. | Seeds, aerial parts, flowers, fruits | Paste, poultice, raw fruits, tooth stick | Constipation, athlete foot, toothache, earache |
| | Chenopodiaceae | | | |
| 41 | <i>Chenopodium album</i> L. | Leaves, Aerial parts | Potherb | Constipation |
| 42 | <i>Chenopodium murale</i> L. | Leaves, Aerial parts | Potherb | Constipation |
| 43 | <i>Spinacia oleracea</i> L. | Leaves | Potherb | Constipation |
| | Convolvulaceae | | | |
| 44 | <i>Convolvulus arvensis</i> L. | Whole plant leaves, | Potherb, powder | Abdominal/stomach problem |
| 45 | <i>Convolvulus microphyllus</i> Sieb. ex Spreng. | Whole plant | Powder | Leucorrhoea |
| 46 | <i>Ipomoea cornea</i> ssp. <i>fistulosa</i> (Mart. ex | Leaves | Paste | Boils |

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| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|--|-----------------------|--|---|
| | Choisy) D. Austin | | | |
| | Cucurbitaceae | | | |
| 47 | <i>Citrullus colocynthis</i> (L.) Schrad. | Roots, pulp, Fruits | Powder, Pickled | Constipation, skin problems, abdominal/stomach problem, pain, digestive problems, toothache, diarrhea |
| 48 | <i>Momordica balsamica</i> L. | Fruits | Potherb, juice, powder, extract | Constipation, blood purifier, boils, pimples, abdominal/stomach problem, asthma, diabetes, obesity |
| | Cuscutaceae | | | |
| 49 | <i>Cuscuta reflexa</i> Roxb. | Whole plant | Paste, extract | Skin problems, antidandruff |
| 50 | <i>Cuscuta monogyna</i> Vahl, Sym. | Whole plant | Paste, extract | Skin problems, antidandruff |
| | Euphorbiaceae | | | |
| 51 | <i>Chrozophora tinctoria</i> (L.) Juss. | Leaves | Juice | Acidity |
| 52 | <i>Euphorbia granulata</i> Forssk. | Whole plant | Powder | Diabetes |
| 53 | <i>Euphorbia prostrata</i> Ait. | Whole plant | Powder | Diabetes |
| 54 | <i>Euphorbia thymifolia</i> L. | Whole plant | Powder, extract | Dysentery, diabetes, diarrhea |
| 55 | <i>Ricinus communis</i> L. | Leaves, oil | Poultice, oil | Constipation, pain, inflammation |
| | Fabaceae | | | |
| 56 | <i>Alhagi maurorum</i> Medic. | Whole plant | Decoction, powder, extract | Blood purifier, pimples, skin problems, abdominal/stomach problem |
| 57 | <i>Alysicarpus longifolius</i> (Rottler ex Spreng.) Wight & Arn. | Leaves | Potherb | Constipation |
| 58 | <i>Cicer arietinum</i> L. | Seeds | Powder | Diabetes |
| 59 | <i>Dalbergia sissoo</i> Roxb. | Stem | Ash | Ringworm, athlete foot |
| 60 | <i>Indigofera hochstetteri</i> Baker | Fruits | Powder | Sexual tonic |
| 61 | <i>Pongamia pinnata</i> (L.) Merril. | Leaves, Fruits | Decoction | Abdominal/stomach problem |
| 62 | <i>Tephrosia purpurea</i> (L.) Pers. | Roots | Extract, tooth stick | Toothache, diarrhea |
| 63 | <i>Tephrosia uniflora</i> Pers. | Roots | Extract, tooth stick | Toothache, diarrhea |
| 64 | <i>Tephrosia uniflora</i> var. <i>petrosa</i> | Roots | Extract, tooth stick | toothache, diarrhea |
| | Lamiaceae | | | |
| 65 | <i>Mentha longifolia</i> (L.) L. | Leaves | Potherb, powder, extract | Piles, abdominal/stomach problem, pain, digestive problems, nausea |
| | Lathyraceae | | | |
| 66 | <i>Lawsonia inermis</i> L. | Leaves | Paste, decoction, powder | Pain, cooling effect, athlete foot, antidandruff |
| | Malvaceae | | | |
| 67 | <i>Abutilon pakistanicum</i> Jafri & Ali | Seeds | Mucilage | Cooling effect |
| | Meliaceae | | | |
| 68 | <i>Azadirachta indica</i> (L.) A. Juss. | Leaves, seeds, fruits | Juice, paste, ash, extract, raw fruits, infusion | Piles, boils, pimples, skin problems, wounds, abdominal/stomach problem, anti-lice, cooling effect |
| 69 | <i>Melia azadirach</i> L. | Leaves, fruits | Juice, paste, extract, infusion | Jaundice, blood purifier, boils, pimples, skin problems, anti-lice, cooling effect |

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| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|--|---|---|---|
| | Mimosaceae | | | |
| 70 | <i>Acacia jacquemontii</i> Benth. | Leaves | Powder | Uterine problems |
| 71 | <i>Acacia nilotica</i> subsp. <i>cupressiformis</i> (T.L. Stewart) Ali | Gum | Potherb | Sexual problems |
| 72 | <i>Acacia nilotica</i> (L.) DeL. subsp. <i>indica</i> (Benth.) Brenan | Leaves, roots, flowers, stem, fruits, gum | Juice, powder, extract, tooth stick | Jaundice, uterine problems, toothache, sexual problems |
| 73 | <i>Albizia lebbek</i> (L.) Bth. | Seeds, stem | Powder, tooth stick, infusion | Toothache, headache, influenza |
| 74 | <i>Prosopis cineraria</i> (L.) Druce. | Gum | Potherb, ash | Wounds, sexual problems |
| 75 | <i>Prosopis glandulosa</i> Torr. | Leaves | Decoction | Uterine problems |
| 76 | <i>Prosopis juliflora</i> (Swartz) DC. | Leaves | Paste | Sexual problems |
| | Moraceae | | | |
| 77 | <i>Ficus bengalensis</i> L. | Leaves, roots, flowers | Powder, extract, infusion | Ringworm, leucorrhoea, flue, diarrhea |
| 78 | <i>Ficus carica</i> L. | Fruits | Poultice, raw fruits | Constipation, piles |
| 79 | <i>Ficus religiosa</i> L. | Leaves, Stem, Fruits | Juice, paste, ash, powder, infusion | Asthma, inflammation, cooling effect, nausea, diarrhea |
| 80 | <i>Morus alba</i> L. | Leaves, Fruits, roots | Decoction, infusion, extract, raw fruits | Intestinal/stomach problem, abdominal/stomach problem, cough, fever |
| 81 | <i>Morus nigra</i> L. | Leaves, roots, fruits | Decoction, extract, raw fruits, infusion | Sore throat, Abdominal/stomach problem, cough, fever |
| | Moringaceae | | | |
| 82 | <i>Moringa oleifera</i> Lamk. | Leaves, roots, seeds, flowers | Potherb, paste, powder, extract, infusion | Sore throat, boils, pimples, skin problems, pain, digestive problems, inflammation, cooling effect, sexual problems |
| | Myrtaceae | | | |
| 83 | <i>Eucalyptus camaldulensis</i> Dehnh. | Leaves | Pickled, infusion, raw leaves | Digestive problems, flue |
| 84 | <i>Psidium guajava</i> L. | Leaves, fruits | Powder, raw fruits | Constipation, abdominal/stomach problem, cough, digestive problems, flue |
| 85 | <i>Syzygium cumini</i> (L.) Skeels | Leaves, stem | Decoction, powder, raw leaves | Pain, leucorrhoea, fever, sexual problems, diarrhea |
| | Nyctaginaceae | | | |
| 86 | <i>Boerhavia diffusa</i> L. | Roots | Powder | Jaundice, Kidney stones |
| 87 | <i>Boerhavia procumbens</i> Banks ex Roxb. | Roots | Paste, Infusion, Raw root | Jaundice, paralysis |
| | Papaveraceae | | | |
| 88 | <i>Argemone mexicana</i> L. | Roots | Paste, raw seeds | Piles, boils, skin problems |
| | Plantaginaceae | | | |
| 89 | <i>Plantago lanceolata</i> L. | Seeds | Raw seeds | Cooling effect |
| 90 | <i>Plantago major</i> L. | Seeds/husk | Mucilage | Cooling agent |
| | Poaceae | | | |
| 91 | <i>Cymbopogon jwarancusa</i> (Jones) | Roots, whole | Potherb, powder, | Measles, cough, chicken pox, |

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| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|---|--------------------------------------|---|--|
| | Schult. | plant, seeds | smoke | fever |
| 92 | <i>Cynodon dactylon</i> (L.) Pers. | Roots, whole plant | Decoction | Pimples, fever |
| 93 | <i>Saccharum spontaneum</i> L. | Leaves | Infusion | Uterine problems |
| | Punicaceae | | | |
| 94 | <i>Punica granatum</i> L. | Roots, Stem, Fruits | Decoction, raw fruits, infusion | Abdominal/stomach problem, digestive problems, toothache |
| | Polygonaceae | | | |
| 95 | <i>Rumex dentatus</i> subsp. <i>klotzschianus</i> (Meisn.) Rech. f. | Leaves | Potherb | Constipation |
| | Rhamnaceae | | | |
| 96 | <i>Ziziphus mauritiana</i> Lam. | Leaves, fruits | Powder, poultice, raw fruits, infusion | Pain, inflammation, diabetes, antidandruff, sexual problems |
| 97 | <i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn. | Leaves, fruits | Poultice, extract, raw fruits | Blood purifier, Pain, Antidandruff |
| 98 | <i>Ziziphus spina-christi</i> (L.) Willd. | Leaves, fruits | Poultice, extract, raw fruits | Blood purifier, pain, antidandruff |
| | Rutaceae | | | |
| 99 | <i>Citrus grandis</i> (L.) Osbeck | Fruits | Raw fruits | Constipation, nausea |
| 100 | <i>Citrus medica</i> var. <i>acida</i> Brandis | Fruits | Raw fruits, raw leaves | Digestive problems, diabetes |
| 101 | <i>Citrus sinensis</i> (L.) Osbeck | Fruits | Raw fruits, raw leaves | Constipation, nausea |
| | Salvadoraceae | | | |
| 102 | <i>Salvadora oleoides</i> Decne. | Fruits, roots, oil | Oil, tooth stick, pickled | Constipation, athlete foot, toothache |
| | Scrophulariaceae | | | |
| 103 | <i>Bacopa monirii</i> L. | Leaves, aerial parts, fruits | Potherb, juice, ash, infusion | Boils, pimples, skin problems |
| | Solanaceae | | | |
| 104 | <i>Datura fastuosa</i> L. | Leaves | Paste, ash, raw leaves, smoke | Boils, asthma |
| 105 | <i>Solanum amricanum</i> Miller | Leaves | Potherb, decoction, extract, infusion | Jaundice, abdominal/stomach problem, inflammation |
| 106 | <i>Solanum incanum</i> L. | Fruits | Raw fruits | Digestive problems |
| 107 | <i>Solanum nigrum</i> L. | Leaves, roots, fruits | Juice, Raw fruits, infusion | Jaundice, uterine problems, leucorrhoea, obesity |
| 108 | <i>Solanum surattense</i> Burm.f. | Leaves, whole plant, flowers, fruits | Juice, ash, powder, extract, raw fruits | Asthma, cough, pain, digestive problems, sexual problems, headache |
| 109 | <i>Solanum villosum</i> (L.) Mill. | Fruits | Juice, raw fruits | Jaundice, obesity |
| 110 | <i>Withania coagulans</i> (Stocks.) Dunal | Leaves, fruits | Paste, powder, raw fruits | Constipation, boils, pimples, skin problems, abdominal/stomach problem, pain, digestive problems, cooling effect |
| 111 | <i>Withania somnifera</i> (L.) Dunal | Leaves, fruits, roots | Paste, powder, poultice | Digestive problems, inflammation, diabetes, sexual problems |
| | Tamaricaceae | | | |
| 112 | <i>Tamarix aphylla</i> (L.) Karst. | Leaves | Powder, Smoke | Wounds, measles |

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| Sr.# | Family/Plant species | Parts used | Method of preparation | Disease treated |
|------|---|--------------------|-----------------------------------|--|
| | Tiliaceae | | | |
| 113 | <i>Corchorus depressus</i> (L.) Stocks | Whole plant | Powder, extract | Jaundice, abdominal/stomach problem, cooling effect, sexual problems |
| 114 | <i>Corchorus tridens</i> L. | Fruits | Juice | Jaundice, sexual problems |
| | Typhaceae | | | |
| 115 | <i>Typha elephantina</i> Roxb. | Whole plant | Paste | Skin problems |
| | Verbenaceae | | | |
| 116 | <i>Phyla nodiflora</i> (L.) Greene | Whole plant | Juice | Piles |
| | Zygophyllaceae | | | |
| 117 | <i>Fagonia bruguieri</i> DC. | Whole plant | Poultice, extract, infusion | Hepatitis, boils, pimples, skin problems, digestive problems, cancer, cooling effect |
| 118 | <i>Fagonia indica</i> var. <i>schweinfuthii</i> Hadidi. | Whole plant | Poultice, extract, infusion | Hepatitis, boils, pimples, skin problems, digestive problems, cancer, cooling effect |
| 119 | <i>Peganum harmala</i> L. | Whole plant, seeds | Powder, extract, raw seeds, smoke | Boils, pimples, abdominal/stomach problem, asthma, digestive problems |
| 120 | <i>Tribulus terrestris</i> L. | Seeds, Fruits | Potherb, powder, extract | Cooling effect, sexual problems |

Plate-1: Some important medicinal flora of the Thal Desert.



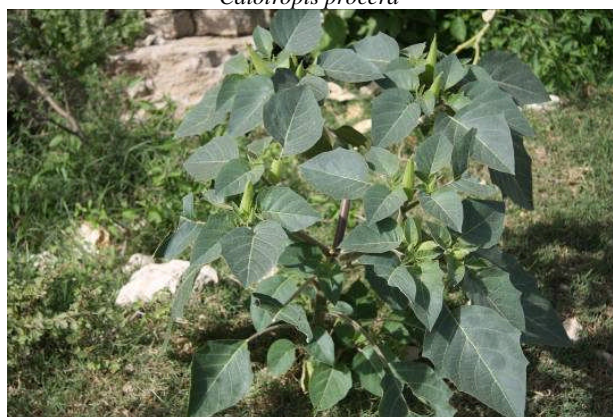
Citrullus colocynthis



Calotropis procera



Capparis decidua



Datura fastuosa

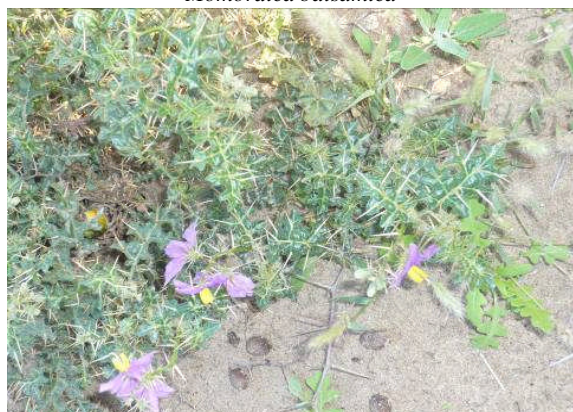
<http://dx.doi.org/10.4314/ajtcam.v11i3.39>



Momordica balsamica



Solanum nigrum



Solanum surattense



Peganum harmala



Tribulus terrestris



Withania somnifera

Conclusion

Due to far flung area, the inhabitants are forced to exploit wild flora to meet their healthcare needs. Furthermore, deserts being hostile climate and inaccessible are less paid attention by the scientific community to document flora and their potential use across the country. Unfortunately, due to expansion of human settlements the native flora along with their natives and their cultural use is under huge pressure and at the verge of extinction. The present enumeration provides specific information about medicinal plants that can be utilized for future drug development programme by various stakeholders. Some important plants especially with reference to medicinal point of view are declining due to overexploitation and if not preserved would vanish, so there is need to protect these valuable plant species. One way to protect these plants is to arrange comprehensive surveys and aware people about importance of plants which they are exploiting just as fuel but they have novel properties for sake of mankind. Research centers should be developed to conduct experiments with plants in this vegetation rich area.

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